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AGRICULTURAL NEWS LETTER

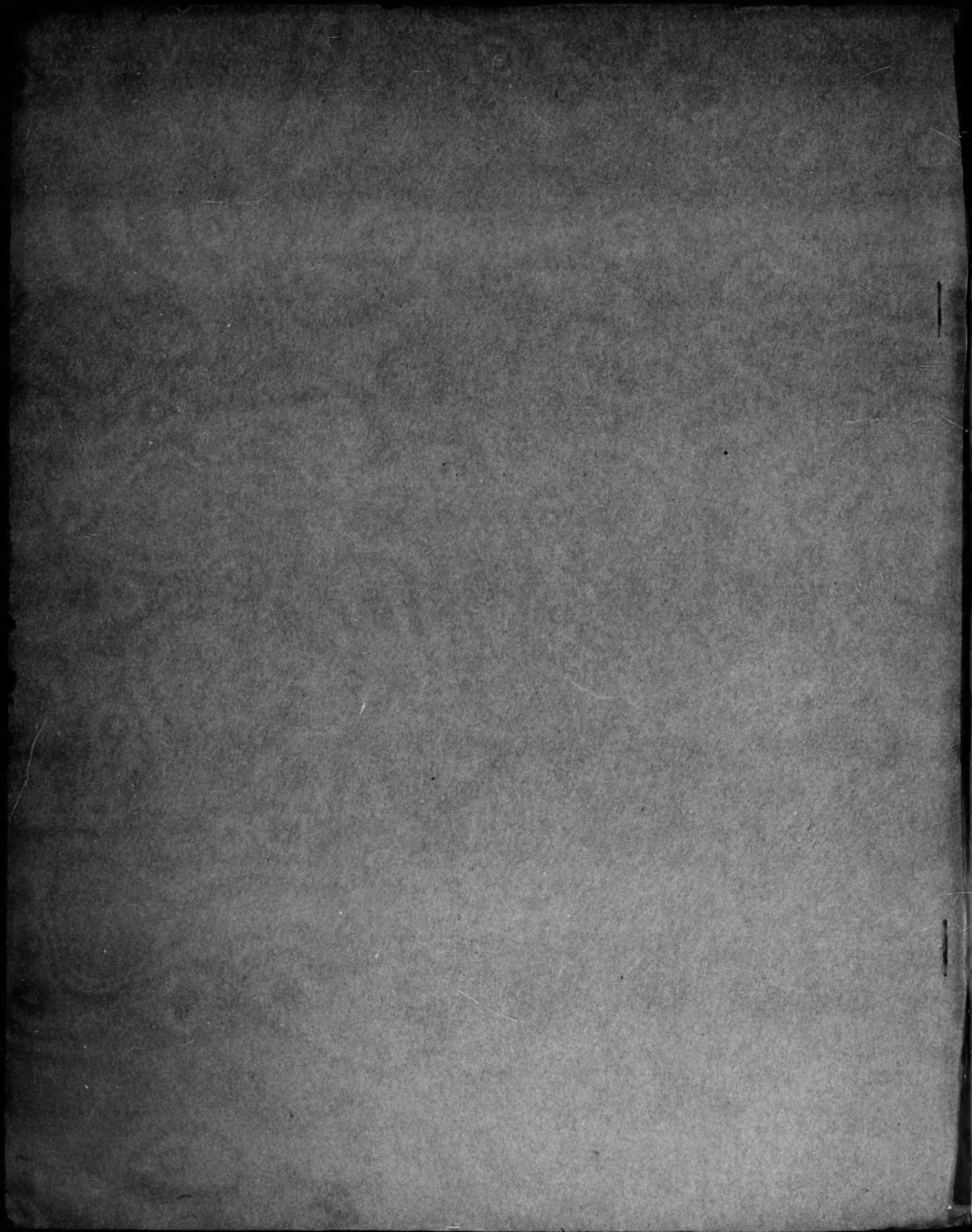
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This publication contains information regarding new developments of interest to agriculture based on laboratory and field investigations of the du Pont Company and its subsidiary companies. It also contains published reports and direct contributions of investigators of agricultural experiment stations and other institutions as related to the Company's products and other subjects of agricultural interest.



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NEW "PARMONE" PRE-HARVEST FRUIT-DROP INHIBITOR FOR APPLICATION BY PLANE

Chemistry is aiding the airplane to come into increased use as a piece of farm machinery, especially in large-acreage crop areas of the country.

Used successfully for several years to dust such crops as cotton and citrus with pest-killing chemical insecticides, the airplane now can be used to apply a new form of hormone spray, containing naphthalene acetic acid in emulsifiable oil, to reduce pre-harvest drop of apples and pears. Hormone sprays, properly used, also help produce better yields, size, color, and quality; and lessen droppage caused by untimely winds and jarring -- without affecting normal ripening.

Use of the airplane to apply the new form of fruit-drop inhibitor is of major interest to large commercial fruit-growing areas such as the Pacific Northwest. The new material is a variation of Du Pont's "Parmone" pre-harvest fruit-drop inhibitor containing naphthalene acetic acid as the active ingredient.

"Parmone," in concentrated form for mixing with water and in powdered form for dusting, has been used successfully for several years; but these older forms, while highly effective for ground spraying and dusting, are not suitable for dispersal from an airplane.

"Aware of the need for a product that would give quick and complete coverage of foliage, stems, and fruit, as well as close timing during the critical harvest period, especially over large orchards, our research staff began studies to develop a material that could be sprayed from a moving plane, as well as from the usual stationary or portable ground sprayers," according to officials of the Grasselli Chemicals Department of the Du Pont Company. The new form of "Parmone," containing the right amount of naphthalene acetic acid in emulsifiable oil for spraying from an airplane, resulted.

A pint of the diluted spray (11 gallons of "Parmone" airplane spray to 19 gallons of water) usually covers an average size tree, compared with 25 to 40 gallons of the older materials needed to apply approximately an equal amount of naphthalene acetic acid.

The agitation of the air caused by the whirling propeller helps disperse the mist evenly over both the surface and interior areas of the tree.

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"DEENATE" IS TRADE-MARK FOR DU PONT'S AGRICULTURAL DDT INSECTICIDE

The Du Pont Company announces that the trade-mark for its agricultural insecticide containing DDT is "Deenate," and that compounds containing the powerful war-developed pest-control product will be available in adequate amounts for fruit and vegetable growers as soon as reduction of military demands permit. DDT output, confined to experimental and military uses until August of this year, is now released in limited quantities for civilian and agricultural uses.

DDT In Pure Form Not Efficient As Insecticide

The announcement points out that DDT in pure form is not efficient as an insecticide. It has to be combined with proper carriers for the particular job to be done. Du Pont, major producer of DDT, has been making various DDT compositions for the Armed Forces. "Deenate" compositions for use on agricultural crops have been evolved from research in the laboratory and the field and are specialized formulations for specific pest-control problems.

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SURVEY SHOWS EXPENDITURES FOR COTTON PRODUCTION RESEARCH

Less than a million and a half dollars, divided among about 400 projects, has been budgeted by various state, federal, and private organizations for use in research dealing with production of raw cotton in the United States. Some additional funds are being spent on studies of distribution problems.

This information was developed by a survey made for the National Cotton Council of America by Dr. Frank J. Welch, head, department of Agricultural Economics, Mississippi Experiment Station, State College, Miss. The Council points out that it could not obtain exact figures on the over-all annual cotton

Continued on next page

research budget, but its estimate indicated the approximate funds spent by all agencies on production research, as follows:

State experiment stations.....	\$ 550,648
Federal and private agencies.....	942,169
Total.....	\$ 1,492,817

"It is not necessary to emphasize the very small comparative budget being devoted to problems of cotton production at the present time," according to Dr. Welch. "For instance, more than \$6,000,000 was made available for research pertaining to one segment of the dairy industry just recently."

Research Covers Twelve Major Fields

The Council found that cotton research work is being developed in 12 major fields, as follows (State projects unless otherwise indicated):

1. Breeding, genetics, and improvement of varieties.
Projects -- 31 in 11 states; 12 federal and private.
2. Variety testing and programs to increase quality seed supplies.
Projects -- 22 in 12 states; 13 federal.
3. Genetic, technical, and economic aspects of cottonseed production.
Projects -- 5 in 4 states; 5 federal and private.
4. Soil fertility and fertilizer.
Projects -- 39 in 11 states; 4 federal.
5. Cottonseed disease control and better germination.
Projects -- 31 in 11 states; 10 federal.
6. Insect and pest control.
Projects -- 15 in 8 states; 90 federal.
7. Cultural methods and mechanical operation.
Projects -- 32 in 11 states; 1 federal.
8. General farm management and marketing and distribution.
Projects -- 32 in 11 states; 1 federal.
9. Ginning and other preparation for market.
Projects -- 6 in 4 states; 14 federal.
10. Fiber analysis.
Projects -- 16 in 9 states; 8 federal.
11. Foreign and domestic competition and demand.
Projects -- 14 federal and private.
12. Domestic price policies and programs.
Projects -- 8 federal.

#####

MAGNESIUM SULFATE (EPSOM SALTS) GIVES GOOD RESULTS IN FERTILIZER FOR
CANE FRUITS IN OREGON EXPERIMENTS

Epsom salts, old standby of the family medicine chest, has been used successfully as an ingredient in a special kind of fertilizer to supply magnesium in an experiment with cane fruits, according to W. L. Powers of Oregon State College, Corvallis. Epsom salts, in the chemists' vocabulary, is magnesium sulfate.

Dr. Powers emphasizes that the chief value of the salts is to correct a shortage of the essential element magnesium in certain soil types. Lack of small amounts of magnesium has long been recognized as an important limiting factor in production of many crops on certain soils in various parts of the country. Fertilizers designed for use on magnesium-deficient soils have long been fortified with various magnesium-carrying materials. This is the first published report, however, of a response to magnesium on Oregon soils.

In one test with this unusual fertilizer, a deficiency disease that caused blotched leaves on gooseberries was remedied. Yield of the berries was materially increased, and their content of vitamin C was found to be about 24 per cent higher than that of berries grown on untreated soil of the same type.

Professor Powers' report, originally published in "Science," Vol. 101, No. 2621, Page 301, is quoted in full below:

"The first instance of definite and profitable response from magnesium applied to Oregon soils was recently obtained by the Soils Department of Oregon Agricultural Experiment Station, in connection with fertility experiments with cane fruits. Treatments were made with gooseberries on Amity silty clay loam in connection with extensive fertilizer experiments that have been carried on since 1939. Application of 30 pounds per acre of magnesium sulfate, or Epsom salts, resulted in the maximum yield of gooseberries in 1944 in comparison with other treatments. The treatment improved cane growth and appearance of foliage, and the net profit was increased \$62.25 an acre above the cost of the treatment.

"Leaf blotch from lack of magnesium is similar to leaf scorch from potash deficiency. Where high applications of potash were made to overcome leaf scorch, there appeared to be a tendency to make the magnesium already in the soil less available to plants. Four plots receiving fertilizer supplying a medium amount of potash gave a net increase of \$10.70 an acre from the treatment. The minor-element plots had been given a blanket application of 500 pounds an acre of complete (5-15-20) fertilizer.

"More than a decade ago, some western Oregon soils such as Veneta silty clay loam and Labish peat were found to be low in magnesium, yet profitable

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response from the use of magnesium-calcium carbonate as compared with calcium carbonate was not previously obtained. Field crops were previously used as indicator plants. Dolomitic limestone has been applied to four plots in two experiment fields, and sulfate of potash-magnesia is also to be tried.

"Analyses by Dr. L. K. Wood in our soils laboratory show scorched leaves to be high in manganese when grown on our acid soils with no fertilizer. Gooseberry leaves from four out of a dozen fertilizer plots were near the indicated critical concentration of magnesium. While available magnesium in these soils is rather low, liming should precipitate and suppress manganese, and magnesium limestone may do this and also supply magnesia which is needed for chlorophyl.

"The vitamin C content of boysenberries from a plot treated with 40 pounds an acre of magnesium sulfate was found to be 24.4 per cent above that of berries from an untreated check plot. This was 2.1 milligrams more per hundred grams than the fruits of any of nine other plots. Raspberries had 4 per cent more vitamin C when grown on a plot treated with magnesium sulfate. These determinations were made with fruit grown on plots located on Powell silt loam. The determinations were made by Dr. J. R. Haag, assisted by Melvin Williams."

#####

SMALL X-RAY MACHINE MOUNTED ON TRUCK OR TRAILER FOR USE IN REMOTE AREAS

The latest development in the war against tuberculosis, a small x-ray machine, promises to be of untold value to large groups of farm people because it is compact enough to be mounted in a closed truck or trailer for transportation to, and use in, the most remote and isolated farm areas. The x-rays are sent through the chest, as usual, but instead of printing a shadow picture on a large photographic film, the shadow is cast on a screen -- called a fluoroscopic screen -- and then a small picture is taken of the screen. In short, a picture of a picture.

One of these mobile truck units makes possible examining as many as 60 persons per hour. Induction stations have used the new method to examine 12,000,000 men for the armed services. Today, with these smaller films, and with the mobile truck units for neighborhood clinics growing in number, x-ray examinations are being brought to larger and larger groups of people, even in remote rural localities. The x-ray equipment depends for much of its effectiveness on the fluoroscopic screen used and on the extra-sensitive photographic film, both manufactured by the Photo Products Department of the Du Pont Company.

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GAIN IN LIVE WEIGHT FROM TREATMENT OF LIGHTLY INFECTED HERD
WORTH THREE TO SIX DOLLARS FOR EVERY DOLLAR SPENT FOR DRUG

In reporting results of a test with young beef cattle on pasture in Ohio, the authors of the paper (reviewed below) conclude that the use of phenothiazine-salt mixtures for control of internal parasites "should prove valuable wherever beef cattle, or non-productive dairy cattle, will voluntarily consume enough of the mixture."

They explain that in 1943, approximately 60 pounds of increased gain (live weight) were obtained for every pound of phenothiazine consumed; and in 1944, approximately 30 pounds of increase per pound of drug were obtained. They add:

"If the cost of phenothiazine is assumed to be \$1.25 per pound, a prevailing price, then the 1943 herd consumed \$5.25 worth of the drug and the 1944 herd consumed \$7.90. Estimating the value of the increased gains at 12¢ per pound, the 1943 herd returned \$31.98 and the 1944 herd, \$26.70 more because of the treatment. Since these cattle did not exhibit any signs of parasitic disease at any time, it is possible that the returns from similar medication in seriously affected herds might be correspondingly greater."

PHENOTHIAZINE-SALT MIXTURES GIVE GOOD CONTROL OF INTERNAL PARASITES
OF BEEF CATTLE IN OHIO TESTS

Use of phenothiazine-salt mixtures, now well established as an important method for control of certain internal parasites of sheep, also offers a new, promising, and economically advantageous way of treating beef cattle and young dairy stock. These animals may consume such mixtures with highly beneficial results, even when the herd is only lightly infected.

This is the conclusion of Dr. Paul D. Harwood and James E. Guthrie of Dr. Hess & Clark, Inc., and of Dr. Norman A. Preble, Ashland College, Ashland, Ohio, in reporting results obtained in "tests to determine the possible value of this type of medication with young beef cattle" on pasture in Ohio.

They add that dairy cattle in production should not be exposed to such a mixture "because a portion of the ingested drug may be excreted in milk intended for human consumption." They point out that the phenothiazine may discolor the milk.

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They add: "However, there seems to be no objection to using the material with beef cattle or with young dairy stock, at which age losses from parasitism may be especially severe." They recommend that "the use of mixtures should be limited to areas where the cattle will consume daily one gram for each 200 pounds of live weight during some portion of the pasture season."

Summary and Conclusions Based on Ohio Test

The Ohio research workers include the following summary and conclusions in a paper entitled "Phenothiazine-Salt Mixture for the Control of Gastro-Intestinal Parasites of Beef Cattle on Pasture," published in "Journal of the Tennessee Academy of Science," Vol. 20, No. 2, April, 1945:

"In 1943, a herd of 13 purebred Hereford steers which was placed on the south half of a 30-acre pasture were given as their sole source of salt a mixture containing 1 part of phenothiazine and 10 parts of salt. The progress of this herd was compared with progress of a control herd of 12 similar cattle on the north half of the same pasture as regards fecal egg-counts and gain in live weight of the steers.

"In 1944, the experiment was repeated using grade Hereford steers, and placing the 14 treated animals on the north half of the pasture; the 15 control animals on the south half of the pasture.

"In 1943, the mean egg-count of the treated herd fell from 90.2 to 7.6 eggs per gram of feces, while similar counts for the control herd fell from 72.3 to 27.9. In 1944, the mean egg-count of the treated herd fell from 38.1 to 5.1 eggs per gram, while similar counts on the control herd fell from 34.4 to 17.0 eggs per gram. These differences were statistically significant.

"The treated herd in 1943 gained 20.5 pounds more on the average than the control herd, and in 1944, the treated herd again outgained the control herd by 15.3 pounds per animal. These differences in the mean gains were highly significant. It should be emphasized that the animals were lightly infected, and that these differential gains were obtained in herds where no animal, either treated or control, suffered from clinical parasitism.

"The major part of the phenothiazine-salt mixtures was consumed in early summer while the pasturage was still very succulent. During this season the mean daily consumption was more than 0.5 grams of phenothiazine per 100 pounds body weight. Since repeated doses of this size effectively reduced fecal egg-counts in cattle, they may be actively vermifugal in these hosts. However, the effect of the treatment on the development of the larval stages cannot be estimated until more information is available.

"The presence of phenothiazine in the salt reduced the salt consumption. This reduction was especially marked when the forage was dry and mature. However, the records of gains in weight and the hemoglobin levels in these animals

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indicate that both the reduced salt intake and the amount of drug consumed were not in any way harmful."

NOTE: A reprint of the paper by Harwood, Guthrie, and Preble, reviewed in the foregoing article, will be sent, on request, by the Grasselli Chemicals Dept., Du Pont Co., Wilmington 98, Del.

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FARMERS IN LEE COUNTY, N. C., SEE DITCH-BLASTING DEMONSTRATION

"Seventy-five progressive farmers of Lee County, North Carolina, saw C. N. Rosser and C. P. Bradley use dynamite to open up wet, swampy places in their two pastures the other day and, despite the fact that there were many roots and several old stumps in the ditch line, an excellent drainage ditch was blasted," says "The Southern Planter," for July, 1945. It adds:

"Rich bottom land was thus made available for valuable pastures on the two farms. The explosive has been used by a number of other farmers through Eastern Carolina who have needed better drainage, and did not have the labor with which to dig needed ditches."

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SCREWORM HITCHHIKES NORTH IN FREIGHT CARS AND IN WOUNDS OF LIVESTOCK

Just because the screwworm, which infests wounds of cattle and other livestock to cause death losses, will not winter farther north than central Texas, does not mean that it is a menace only in the area of its origin.

So says Dr. Ephraim Hixson, extension entomologist in Oklahoma, who warns livestock growers that the screwworm moves as far north as the Kansas and similar pasture areas in livestock cars and in infested wounds.

Dr. Hixson advises all stockmen to keep a sharp eye for the pest, especially in hot weather, and in addition recommends use of Smear 62 on all suspected wounds.

He is quoted in a recent issue of "Capper's Farmer" as reporting that this medicament, made of diphenylamine, benzol, turkey-red oil, and lampblack, is "fully effective." He adds: "It does not destroy live tissues as chloroform and creosote do."

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MANY CASES OF "SWOLLEN JOINTS" AMONG YOUNG CATTLE IN FLORIDA

Florida cattlemen, during the calving season last year, reported a condition commonly called "swollen joints" or "lameness" among young calves in many sections of the state. The estimated mortality was approximately 80 per cent of the animals affected, and many of the survivors were permanently crippled or stunted. A loss of 5 per cent of the calf crop was not unusual on individual ranches, and on one ranch 70 of 300 calves died.

Results of observations made by the College of Agriculture of the University of Florida, on 16 affected range calves from two to eight weeks old on eight widely scattered ranches, are briefly reviewed below.

TREATING AND DISINFECTING UNHEALED NAVEL OF NEWBORN CALF TO REPEL SCREW WORM FLY AND SPEED HEALING HELPS CONTROL "SWOLLEN JOINTS"

Elimination of screwworm infestation of the unhealed navel of the newborn or very young calf by treatment with tincture of iodine and "a reliable fly repellent," with subsequent treatment until the navel is completely healed, is deemed the most practical means of controlling "swollen joints" in young calves.

So says Dr. M. W. Emmel, veterinarian at the University of Florida Agricultural Experiment Station, who found that 90 per cent of the cases of "swollen joints" or "lameness" prevalent in Florida last year were associated with infestations of the navel by the screwworm fly. He urges prompt medication of the navels of newborn calves, even when no screwworm infestation is apparent.

Dr. Emmel, in a new Florida Experiment Station Bulletin, No. 407, "Swollen Joints" in Range Calves," says that under range conditions cattlemen have discarded the use of benzol to kill the screwworm in a wound. He adds: "They have found that the application of a reliable screwworm-fly repellent serves to kill the larvae as well as to repel the fly."

Ranchers Use Smear Made According to Government Formula

Smear 62 kills all screwworms in a wound, and protects it against reinfestation and thus against spread of the pest. This medicament, made according to a formula discovered and developed by the U. S. Bureau of Entomology and Plant Quarantine, contains diphenylamine, benzol, turkey-red oil, and

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lampblack, and is sold by most suppliers of veterinary medicines in areas where the screwworm is considered a menace.

Good Disinfectant Needed In Conjunction With Screwworm Repellent

Dr. Emmel points out that the commercial screwworm-fly repellents used on Florida ranches where "swollen joints" prevailed were made according to the government formula for Smear 62. He says it is essential that a good disinfectant should be used in conjunction with a reliable screwworm repellent when navels are being treated. Tincture of iodine is the best disinfectant that can be used for this purpose, he adds.

The Florida studies revealed the fact that "swollen joints" develop in calves under four weeks of age.

Knee or Hock Joint Most Frequently Affected

"The knee, elbow, hock, stifle, or hip joint may become affected, but the most frequent occurrence is in the knee or hock joint and the least frequent in the hip joint," Dr. Emmel says. "In most instances only a single joint is involved. The joint becomes enlarged and intensely inflamed, and pus may accumulate in the joint capsule."

Nine Out of Ten Cases Associated With Screwworm-Fly Infestation

The Florida veterinarian's field survey indicated that nine out of ten of the cases of "swollen joints" were associated with infestation of the navel by the screwworm fly Cochliomyia americana C. & P. He adds:

"This fly is deemed an important means of transmission of this type of infection, and the activities of the larvae apparently facilitate infection in infested navels. Streptococcus pyogene was isolated from three of the sixteen naturally occurring cases, and the disease was induced experimentally by navel infection with this micro-organism, with and without screwworm infestation."

#####

PROPER USE OF COMMERCIAL NITROGEN GREATLY INCREASES MIDWEST CORN YIELD

Assertion that use of adequate amounts of commercial nitrogen to supplement current soil-fertility practices will return profitable increases in yield of corn -- perhaps double the present average acre production -- "comes almost as a bombshell among Midwest farmers who have long been told that commercial nitrogen does not pay," says Dr. Roger H. Bray of the University of Illinois.

Yet, he says, a growing amount of evidence is being accumulated through research to show that commercial nitrogen, properly used, pays well. For instance, studies at Purdue University indicate that it takes two pounds of nitrogen*, used in conjunction with the usual legume-manure program, to produce a bushel of corn.

"As commercial nitrogen currently sells for about 10 cents a pound, the additional cost for each bushel would be only 20 cents," Dr. Bray says. "The margin of profit obviously is considerable. Even at 50-cent corn, nitrogen probably can be used at a profit when supplementing good soil-fertility practices."

Might Double High Average Yields of Recent Years

"The possibilities are tremendous," he says. "While hybrid corn meant an increase of 10 to 15 per cent in yields, this new soil fertility program might double even the high average yields of recent years on our better soils. Not all farmers may be able to climb this high, and not all seasons will supply enough water for such yields, but present yields are far below those that can be obtained with the usual rainfall."

Dr. Bray, who is chief in soil survey analysis at the Illinois College of Agriculture, points out that farmers on the rich prairie soils have not been fully aware of the need for nitrogen. They have been getting what they consider high yields without the use of commercial nitrogen.

He says experimental field results at the University of Illinois, for instance, show that the lime-and-legume program, supplemented by potash and phosphate in the required amounts, will bring corn yields up to an average of 96 bushels an acre in the dark-soil areas.

Individual Farmers Often Grow Up To 150 Bushels of Corn Per Acre

"Nearly every year, however, individual farmers in the dark-soil areas of the Midwest cash in on corn yields that range up to 150 bushels per acre.

*Two pounds of nitrogen may be supplied by 4-3/4 pounds of "Uramon" fertilizer compound, which carries 42 per cent nitrogen in the form of urea.

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The record for Illinois is 193 bushels. Neighbors have wished they could hit the corn-production jackpot. Data indicate they can -- furthermore through the use of commercial nitrogen they can do it at a profit."

The Illinois scientist says that research indicates that 150-bushel yields are not freak occurrences.

"They are obtained usually in old pasture or feed lots where there is nitrogen in excess of that produced by legumes or ordinary amounts of manure. On the other hand, the phosphorus and acidity tests show that the available supplies of these two nutrients are no higher than on numerous other soils yielding far less."

Rainfall Principal Uncontrollable Factor Limiting Yields

"Rainfall is the principal limiting factor to corn yields that we cannot control, but even in an average season it is sufficient for yields double or more the high county averages in recent years," Dr. Bray says.

Discussing the supplemental use of commercial nitrogen, he says that "nitrogen, according to experimental evidence, is the only added cost. If there are adequate amounts of potash and phosphate for the 96-bushel yields, it is not necessary to increase these.

"Moisture and minerals may be made to stretch. Additional root vigor resulting from the nitrogen will enable the plant to obtain water, potash, and phosphate from a wider area. In fact, where the soil is in good physical condition, the added nitrogen will serve as a partial safeguard against deficiencies of these elements."

Dr. Bray points out that commercial nitrogen promises to have value not only as a supplement to a good legume program, but as an emergency measure to provide fertility when a legume crop fails. He says also that the greater the yields the more foliage and stalks will be returned to the soil.

"These will in turn further improve its tilth, providing for still greater crop yields. High fertility has long been a first in erosion control. Plant fibres help prevent water from cutting away soil particles."

#####

RESEARCH COUNCIL LISTS VITAMIN D DEFICIENCY SYMPTOMS OF POULTRY

Growers of chickens and turkeys can frequently determine by observation whether their birds are getting adequate amounts of vitamin D. If in doubt, they should of course consult a veterinarian or a trained poultry nutritionist.

The more common gross pathological symptoms seen in poultry maintained on diets deficient in vitamin D, described below, are quoted from "Recommended Nutrient Allowances for Poultry," a report of the Committee on Animal Nutrition, National Research Council.

This report points out that one shortcoming of such a description is that the symptoms are observed, for the most part, in poultry fed rations severely deficient in vitamin D. Under these conditions only the acute symptoms develop, making diagnosis relatively easy. It adds:

"On the other hand, the gross symptoms observed in case of a chronic deficiency of any one of several factors may be similar (perhaps only retarded growth, ruffled plumage, etc.), thus making accurate diagnosis difficult if not impossible. The chronic deficiency may be more serious in the long run than the acute, since in the latter case diagnosis and treatment may be readily obtained while the chronic deficiency continues to exist because of failure to diagnose it."

The report concludes that very probably some of the pathological symptoms resulting from a lack of vitamin B₁ (thiamin), pantothenic acid, nicotinic acid (niacin), pyridoxin (vitamin B₆), choline, biotin, calcium and phosphorus, magnesium, iodine, and iron and copper, all of which are described, may never appear under practical conditions. It adds that, on the other hand, deficiencies of vitamin A, vitamin D, riboflavin, and manganese, which are also outlined, may often appear among growing chicks and breeding hens.

LACK OF VITAMIN D CAUSES RICKETS - DECREASES EGG PRODUCTION, HATCHABILITY

Lack of vitamin D results in the nutritional deficiency known as rickets, especially in young chickens and turkeys, and in decreased production and hatchability of eggs from laying hens, according to the report of the Committee on Animal Nutrition, National Research Council, referred to above.

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When chicks do not get direct sunlight or enough vitamin D in their feed, they are retarded in growth, show a disinclination to walk, or walk with a lame stiff-legged gait, and have an ungainly manner of balancing the body, the Council's report says. The chicks appear generally unthrifty.

Resulting Inadequate Absorption and Retention of Calcium
and Phosphorus Causes Abnormal Bone Development

The report explains that in this disorder, an upset occurs in the mechanism involving the absorption and retention of calcium and phosphorus, as a result of which these minerals are not deposited in normal amounts in the bony structure of the body.

"Abnormal bone development may be detected most readily in the legs, and at the junction of the ribs on the sides of the breast," the report says. "The spinal column may be curved and the sternum usually shows acute lateral bending or depression. Enlargement of the hock joints and beading of the rib ends become apparent. The beak is soft and rubbery and may easily be bent."

The report says a deficiency of either calcium or phosphorus may cause symptoms similar to those described for vitamin D.

Birds Temporarily Lose Use of Legs

The discussion explains that in mature laying birds the first symptom of a vitamin D deficiency is the laying of thin-shelled eggs, followed very shortly by decreased egg production. It says that the breast bone becomes soft and rubbery and the bones of the legs and wings become fragile and easily broken. Birds may lose temporarily the use of their legs, a symptom which sometimes has been called "egg paralysis." Hatchability is reduced markedly.

Symptoms in Turkeys Similar to Those in Chickens

The report says that the symptoms of a vitamin D deficiency in turkeys are very similar to those in chickens.

NOTE: A copy of Du Pont's booklet "Delsterol" "D"-Activated Animal Sterol will be sent on request to the Editor, Du Pont "Agricultural News Letter," Wilmington 98, Delaware. "Delsterol," in edible powder, is Du Pont's vitamin D, produced entirely from domestic raw materials. The booklet includes the history of the development of the scientific principle from which "Delsterol" evolved, with a discussion of the importance of this product to the poultry industry.

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FARMERS URGED TO OBTAIN ADVICE BEFORE USING DYNAMITE FOR DITCHES

Soil Conservation Service technicians caution farmers not to attempt to use dynamite for blasting ditches without first obtaining expert advice. They explain:

"Soil types and the amount of moisture in the ground must be taken into consideration in calculating the amount and type of explosive to use. The size of the charge and the method of blasting varies considerably with the moisture content of the soil.

"There are two distinct methods of ditching with dynamite -- the propagation and the electric, differing in the means by which simultaneous detonation in a series of charges is produced. The propagation method is only used when there is sufficient water in the soil. The shock from the explosion of the primed cartridges communicates itself through the other charges with sufficient strength to detonate them. In the electric method, each hole is primed with an electric blasting cap, connected with a circuit, and fired with an electric blasting machine."

DITCHING WITH DYNAMITE PERMITS GRAZING ON LAND FORMERLY TOO WET TO USE

"My cows can now graze anywhere on my pasture. They are now grazing where, in previous years, it has been too wet for them to go. New grasses are growing which should greatly increase the forage production." -- Statement by Harold Peterson, farmer of Loa, Utah, following construction with dynamite of a drainage ditch through his land.

Thousands of acres of swampy pasture and other agricultural soils throughout the United States are being reclaimed "with a bang."

Farmers all over the country are using dynamite as an efficient and economical means of digging ditches to drain and restore water-logged land to profitable use.

So says the Soil Conservation Service of the U. S. Department of Agriculture, in reporting results of blasting hundreds of miles of drainage ditches in the various soil conservation districts under its jurisdiction.

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Soil Conservation Service engineers state that this method is apparently best adapted to creating shallow surface drains, especially in land so wet that the use of heavy machinery is difficult or impossible.

"Blasting has proved to be a comparatively cheap method of constructing drainage channels. If land through which these channels are constructed requires irrigation, head gates and turnouts can be placed along the drain and the land subirrigated. By removing the head gates, the subbing would be stopped, and the ditch converted into a drain again."

Report from Fremont River District in Utah Is Typical

The following report from Utah is typical:

"Farmers in the Fremont River Soil Conservation District, located around Loa and Richfield, Utah, are doing their ditching with dynamite in the form of a special 50 per cent nitroglycerine blasting mixture. The drainage ditches were about three feet deep and six feet wide.

"Dynamite was placed in holes poked into the wet sod by means of a sharp stick or driving bar. They were spaced approximately six inches under the wet sod and about 18 inches apart along the line where the drain was desired. One cap and one fuse were used to set off the charge by propagation, and the entire drainage was opened up with a blast. The shock from one exploding stick carries to the next through the water-logged soil and detonates it."

Harold Peterson, Leonard Albrecht, and Warren Taylor were the first farmers to use this method in the Fremont River District. They were assisted in planning the job by Soil Conservation Service technicians and a representative of the dynamite manufacturers.

George M. Hunt, chairman of the Board of Supervisors of the District, said: "This is a cheap method of drain construction, and under the proper conditions farmers are able to drain the surplus water from swampy land that has ordinarily been too wet to graze milk-cows and other livestock on."

Some Districts Use Dynamite to Clean Canals Filled By Spring Floods

Commenting on the results obtained elsewhere, the Utah report says that farmers report "very satisfactory results" from this method of constructing drainage channels.

Some of the districts have also used dynamite to clean canals that have been filled by spring floods. These include the Tremonton area, the Uintah Basin, Panguitch area, and the Salt Lake County Soil Conservation Districts.

NOTE: A copy of Du Pont's booklet "Ditching with Dynamite," will be sent on request to the Editor, Du Pont "Agricultural News Letter," Wilmington 98, Delaware.

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FORMALDEHYDE -- TRIED AND FOUND GOOD OVER PERIOD OF YEARS

"Formaldehyde has been widely used for many years to control certain diseases of grain, vegetable, potato, and other seeds; and for soil, equipment, and storage-house sterilization," according to a new Du Pont booklet. briefly reviewed below.

This booklet says the value of formaldehyde "has been established through the results which are obtained in following prescribed and recommended treatment." It warns that the formaldehyde treatment is not a "cure-all," and that it cannot take the place of good soil and good seed. Copy will be sent on request addressed to the editor, Du Pont "Agricultural News Letter."

FORMALDEHYDE AS A DISINFECTANT, FUNGICIDE, GERMICIDE, AND DEODORANT

Formaldehyde is invaluable as a disinfectant, fungicide, germicide, and deodorant on the farm and in the home. It is useful in promoting cleanliness and sanitation.

So says a new booklet, "How to Use Formaldehyde On the Farm and In the Home," recently issued by the Electrochemicals Department of the Du Pont Company.

The booklet gives directions for the use of formaldehyde, pointing out that it may be applied as a wash, spray, or fumigating gas. Discussing its use as "an excellent, reliable disinfectant and effective deodorant," for control of disease germs, mould, and musty or offensive odors in the home, stables, pigpens, chicken coops, poultry runs, pigeon lofts, dog kennels, and outbuildings, the booklet says formaldehyde "actually unites chemically with many products of decay, fermentation, and decomposition to destroy these sources of offensive odors. Used in the dilute forms recommended, it is not sufficiently toxic to endanger animal life, and does not injure silks, linens, cottons, woollens, furniture, household utensils, nor any farm implements."

The booklet includes instructions for use of formaldehyde for a number of important home and farm applications, such as for control of damping-off of certain vegetables, and prevention of storage rots and infections in storage of potatoes and other crops.

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Damping-Off of Vegetables

"One of the most serious problems of the vegetable grower is caused by fungi which are present in the soil or carried on or in the seed," it says. The character of the soil, temperature, amount of water used, drainage, aeration, etc., are factors influencing the extent of the injury. Typically, the seedlings decay at the soil line, thus causing them to topple. Perhaps even more common, if less frequently observed, is the decay which occurs before the young plants emerge from the soil and under certain conditions even before they germinate. Seed treatments give good results with some vegetables, but with other vegetables, seed treatment is inferior to certain soil treatment for the control of post-emergence damping-off.

"Formaldehyde has long been an accepted chemical for the treatment of soil for the control of damping-off diseases. Three methods of application of the formaldehyde for soil treatment are in general practice, with conditions and convenience determining the choice of procedure."

These are listed and discussed as (1) the Standard Drench Method; (2) the Improved Method, developed by the New York State Agricultural Experiment Station; and (3) the Post-Seedling Method, developed by the Massachusetts and the New Jersey Agricultural Experiment Stations.

Prevention of Storage Rots and Infections In Storage

The booklet says disease and decay-producing organisms which affect such crops as sweet potatoes and white potatoes may remain alive for many months in the storage house, in the soil, and in refuse from previously stored crops.

"These organisms should be eliminated before the new crop is stored by removal of all soil and refuse from the storehouse and also by thorough cleaning and sterilization of the surfaces, including bins, crates, baskets, machinery, and tools," the booklet explains. "Sterilization may be accomplished by the application of appropriate fungicides, as a spray, wash, or gas. Formaldehyde solution is one of the most commonly used fungicides, as it can be employed as a spray, dip, wash, or as a source of formaldehyde gas. Since formaldehyde is a volatile gas it can be removed from the warehouse or utensils by airing after sterilization."

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AIRPLANES USED TO PLANT LESPEDEZA SEED AND BROADCAST FERTILIZERS IN ARKANSAS

Airplanes were used in Arkansas last spring to plant and fertilize farm crops, "proving the airplane can be used satisfactorily as a labor-saving device on the farm," according to the Extension Service of the University of Arkansas College of Agriculture.

Farmers in the south half of Arkansas county used the planes to plant 7,150 acres of lespedeza seed, and to broadcast nitrogen fertilizer over 2,929 acres of oats, and superphosphate over 257 acres of lespedeza.

Could Not Have Been Done Any Other Way Because of Labor Shortage and Rain

"These things could not have been done any other way because of the shortage of farm labor and machinery," says County Agent W. F. Wright. "In addition, continuous rains fell all spring, and never during March did the soil dry out enough for wheel-type equipment to enter the fields without causing great damage."

Mr. Wright says that lespedeza seed had never been sown by airplane in Arkansas county before. It was also the first time a nitrogen fertilizer material had been broadcast from a plane, but some superphosphate had been applied from the air before.

About 178,000 pounds of lespedeza seed were sown at the rate of 1,220 pounds per hour, or approximately 50 acres an hour. With long fields, more than this was sown. Mr. Wright says that the conventional method, that of the endgate seeder, averages only four acres per hour.

"About 293,000 pounds of the nitrogen material were broadcast at the rate of 3,000 pounds per hour, or 30 acres an hour," he reports. "By the endgate-seeder method, only four to five acres can be fertilized per hour."

Seventy-Four Farmers Included In Project

"Seventy-four farmers received the benefit of this labor-saving device," Mr. Wright says. "It is estimated that 258 man-days of labor were saved by the airplane, compared with the number that would have been required by the conventional methods of application."

The Arkansas county agent points out that saving of lespedeza seed and the broadcasting of the fertilizer cost the farmer approximately \$1.00 per acre. He adds: "This is somewhat higher than the cost for the conventional manner, but taking into consideration that it probably would not have been done at all, use of the airplane was very inexpensive."

Mr. Wright says it is probable that as this practice increases, the cost will be considerably lower.

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